

## CLAIMS

What is claimed is:

1. An apparatus for identifying paper cassettes of an image forming apparatus which supports to output various types of paper, the apparatus comprising:
  - first through N-th paper cassettes, wherein each of N-1 (where N is a positive integer greater than 1) output ports is connected to N-1 input ports, which have one of N input ports and one of N output ports;
  - a paper cassette identification unit which generates a synchronizing signal in response to an identification symbol which is transmitted from one of the first through N-th paper cassettes which indicates one of the first through N-th paper cassettes, and transmits the generated synchronizing signal to the paper cassettes in which an undefined symbol that indicates that an identification signal has not been assigned, among the first through N-th paper cassettes is given; and
  - a serial bus which connects the first through N-th paper cassettes to the paper cassette identification unit.
2. The apparatus of claim 1, wherein in the first through N-th paper cassettes, when an electric source is applied to the first through N-th paper cassettes from an electric source supply line, a first signal is inputted into one of the N input ports, and a second signal is inputted into or outputted from each of the N-1 input ports and the N-1 output ports.
3. The apparatus of claim 2, wherein the first signal is at a "high" or "low" level, and the second signal is complementary to the first signal.
4. The apparatus of claim 3, wherein an M paper cassette (where M is a positive integer smaller than or the same as N) into which the first signal is inputted is assigned an identification symbol and transmits the identification symbol to the paper cassette identification unit, and an N-M paper cassette into which the second signal is inputted is assigned an undefined symbol, respectively.

5. The apparatus of claim 4, wherein the M paper cassette converts the second signal, outputted from the M output port of the M paper cassette, into the first signal.
6. The apparatus of claim 1, wherein the paper cassette identification unit receives a predetermined identification symbol from one of the first through N-th paper cassettes in which the identification symbol is assigned, and stops generation of the synchronizing signal.
7. The apparatus of claim 1, wherein the serial bus connects the first through N-th paper cassettes to the paper cassette identification unit via one line.
8. A method for identifying paper cassettes of an image forming apparatus having first through N-th paper cassettes (where N is a positive integer greater than 1) in which paper is held and supports to output various types of paper, the method comprising:
  - applying an electrical source to each of the first through N-th paper cassettes and providing first and second signals to each of the first through N-th paper cassettes;
  - determining whether a first signal is provided to one of the first through N-th paper cassettes;
  - upon determining that the first signal is provided to one of the first through N-th paper cassettes, assigning an identification symbol which indicates the one of the first through N-th paper cassettes to which the first signal is provided, and transmitting the identification symbol to a paper cassette identification unit which identifies the first through N-th paper cassettes;
  - converting the second signal outputted from an output port of one of the paper cassettes in which the identification symbol is assigned, into a first signal;
  - upon determining that a first signal is not provided to one of the first through N-th paper cassettes, assigning undefined symbols which indicate that the identification symbols are not assigned in the first through N-th paper cassettes to which the second signal is provided; and
  - upon determining whether a synchronizing signal is supplied to the

first through N-th paper cassettes in which the undefined symbols are given, from the paper cassette Identification unit, and if it is determined that the synchronizing signal is supplied to one of the first through N-th paper cassettes, then determining whether the first signal is provide to one of the first through the Nth paper cassettes.

9. The method of claim 8, wherein the first signal is at a "high" or "low" level, and the second signal is complementary to the first signal.